

WHAT IS CLAIMED IS:

1. A tuner comprising:

a reference oscillating circuit having a reference oscillator circuit and an amplifier;

a voltage controlled oscillator;

a PLL circuit for comparing in phase an oscillating signal of the reference oscillating circuit and an oscillating signal of the voltage controlled oscillator and for controlling an oscillating frequency of the oscillating signal of the voltage controlled oscillator according to a result of the comparison made by the PLL circuit;

a mixer for converting an input signal to an intermediate-frequency signal in frequency according to the oscillating signal of the voltage controlled oscillator; and

an inductance device connected between the reference oscillator circuit and the amplifier to pass the oscillating signal of the reference oscillating circuit and to block the oscillating signal of the voltage controlled oscillator.

2. The tuner according to Claim 1, further comprising an input terminal, first to fourth band-pass filters, an automatic gain controller, first to third amplifiers, first and second mixers, first and second voltage controlled oscillators, first and second PLL ICs, a reference

oscillator circuit, and an output terminal.

3. The tuner according to Claim 2, wherein the second PLL IC and the reference oscillator circuit are connected via the capacitor and one of the amplifiers.

4. The tuner according to Claim 2, wherein an amplifier is disposed in the first PLL IC and is connected to the reference oscillator circuit through an inductance device.

5. The tuner according to Claim 4, wherein the reference oscillator circuit and the amplifier built in the first PLL IC define a reference oscillating circuit.

6. The tuner according to Claim 2, wherein the inductance device includes a printed pattern and is arranged to block the oscillating signal of the first voltage controlled oscillator.

7. The tuner according to Claim 1, wherein the tuner is a double-conversion tuner.

8. A tuner comprising:

a reference oscillating circuit having a reference

oscillator circuit and an amplifier;

a voltage controlled oscillator;

a PLL circuit for comparing in phase an oscillating signal of the reference oscillating circuit and an oscillating signal of the voltage controlled oscillator and for controlling an oscillating frequency of the oscillating signal of the voltage controlled oscillator according to a result of the comparison made by the PLL circuit;

a mixer for converting an input signal to an intermediate-frequency signal in frequency according to the oscillating signal of the voltage controlled oscillator;

a filter connected between the reference oscillator circuit and the amplifier to pass the oscillating signal of the reference oscillating circuit and to block the oscillating signal of the voltage controlled oscillator.

9. The tuner according to Claim 8, wherein the filter is a low-pass filter including an inductor and capacitors.

10. The tuner according to Claim 8, wherein the filter is one of a low-pass filter, a band-pass filter and a band-elimination filter.

11. The tuner according to Claim 8, further comprising an input terminal, first to fourth band-pass filters, an

automatic gain controller, first to third amplifiers, first and second mixers, first and second voltage controlled oscillators, first and second PLL ICs, a reference oscillator circuit, and an output terminal.

12. The tuner according to Claim 11, wherein the second PLL IC and the reference oscillator circuit are connected via the capacitor and one of the amplifiers.

13. The tuner according to Claim 11, wherein an amplifier is disposed in the first PLL IC and is connected to the reference oscillator circuit through an inductance device.

14. The tuner according to Claim 13, wherein the reference oscillator circuit and the amplifier built in the first PLL IC define a reference oscillating circuit.

15. The tuner according to Claim 1, wherein the tuner is a double-conversion tuner.

16. A tuner comprising:
a reference oscillating circuit;
a voltage controlled oscillator;
a PLL circuit for comparing in phase the oscillating

signal of the reference oscillating circuit and the oscillating signal of the voltage controlled oscillator and for controlling the oscillating frequency of the oscillating signal of the voltage controlled oscillator according to a result of the comparison made by the PLL circuit;

a mixer for converting an input signal to an intermediate-frequency signal in frequency according to the oscillating signal of the voltage controlled oscillator; and

an inductance device connected between the reference oscillating circuit and the PLL circuit to pass the oscillating signal of the reference oscillating circuit and to block the oscillating signal of the voltage controlled oscillator.

17. The tuner according to Claim 16, further comprising an input terminal, first to fourth band-pass filters, an automatic gain controller, first to third amplifiers, first and second mixers, first and second voltage controlled oscillators, first and second PLL ICs, a reference oscillator circuit, and an output terminal.

18. The tuner according to Claim 17, wherein the second PLL IC and the reference oscillator circuit are connected via the capacitor and one of the amplifiers.

19. The tuner according to Claim 17, wherein an amplifier is disposed in the first PLL IC and is connected to the reference oscillator circuit through an inductance device.

20. The tuner according to Claim 19, wherein the reference oscillator circuit and the amplifier built in the first PLL IC define a reference oscillating circuit.

21. The tuner according to Claim 17, wherein the inductance device includes a printed pattern and is arranged to block the oscillating signal of the first voltage controlled oscillator.

22. The tuner according to Claim 16, wherein the tuner is a double-conversion tuner.

23. A tuner comprising:
a reference oscillating circuit;
a voltage controlled oscillator;
a PLL circuit for comparing in phase the oscillating signal of the reference oscillating circuit and the oscillating signal of the voltage controlled oscillator and for controlling the oscillating frequency of the oscillating signal of the voltage controlled oscillator according to a

result of the comparison made by the PLL circuit; and

a mixer for converting an input signal to an intermediate-frequency signal in frequency according to the oscillating signal of the voltage controlled oscillator; and

a filter connected between the reference oscillating circuit and the PLL circuit to pass the oscillating signal of the reference oscillating circuit and to block the oscillating signal of the voltage controlled oscillator.

24. The tuner according to Claim 23, wherein the filter is a low-pass filter including an inductor and capacitors.

25. The tuner according to Claim 23, wherein the filter is one of a low-pass filter, a band-pass filter and a band-elimination filter.

26. The tuner according to Claim 23, further comprising an input terminal, first to fourth band-pass filters, an automatic gain controller, first to third amplifiers, first and second mixers, first and second voltage controlled oscillators, first and second PLL ICs, a reference oscillator circuit, and an output terminal.

27. The tuner according to Claim 26, wherein the

second PLL IC and the reference oscillator circuit are connected via the capacitor and one of the amplifiers.

28. The tuner according to Claim 26, wherein an amplifier is disposed in the first PLL IC and is connected to the reference oscillator circuit through an inductance device.

29. The tuner according to Claim 28, wherein the reference oscillator circuit and the amplifier built in the first PLL IC define a reference oscillating circuit.

30. The tuner according to Claim 23, wherein the tuner is a double-conversion tuner.